

# Impacts of Visitor Spending on the Local Economy: Chesapeake & Ohio Canal National Historical Park, 2003



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**January 2005**



National Park Service  
Social Science Program

Department of Community, Agriculture,  
Recreation and Resource Studies  
Michigan State University

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## Executive Summary

Chesapeake & Ohio Canal National Historic Park hosted 2.8 million recreation visits in 2003. These visits represented about one million party nights within a half-hour drive of the park (Table E1). The two largest segments in terms of days spent in the region were day visitors (68%) and visitors staying with friends or relatives, campgrounds or seasonal homes (16%).

On average, park visitors spent \$31 per party per day in the local area with spending varying from \$17 per party per day for day trips to \$203 per night for travel parties staying in hotels, motels or B&B's. In 2003, park visitors spent a total of \$46.9 million within a half hour drive of the park.

As most overnight visitors did not make the trip to the area primarily to visit the park and spent only a few hours in the park, only a portion of their spending is attributed to the park visit<sup>1</sup>. Thirty million dollars of spending is attributed to the park. Visitors staying overnight in hotels or motels account for 45% of this total, followed by visitors on day trips (37%). The majority of the visitor spending attributed to the park was for restaurant meals (\$8.4 million) and hotels (\$7.0 million).

**Table E1. Chesapeake & Ohio Canal National Historic Park visits and spending by segment, 2003**

Lodging segment	Recreation visits (000's)	Party days/nights (000's)	Average spending (per party night)	Total Spending (million's)	Attributed Spending (\$ millions)
Day trips	2,183	660	\$17	\$11.0	\$11.0
Camp inside the park	69	28	\$58	\$1.6	\$1.6
Hotel outside the park	253	131	\$103	\$26.7	\$13.6
<u>Other overnight visitor</u>	<u>297</u>	<u>158</u>	<u>\$25</u>	<u>\$7.5</u>	<u>\$3.9</u>
<b>Total visitors</b>	<b>2,802</b>	<b>977</b>	<b>\$31</b>	<b>\$46.9</b>	<b>\$30.2</b>

The economic impact of the visitor spending was estimated with the National Park Service's Money Generation Model version 2 (MGM2). The MGM2 model uses park visitation data, spending averages from the 2003 Chesapeake & Ohio Canal National Historic Park Visitor Survey and the MGM2 large metro multipliers to estimate spending, income and jobs attributable to the park. The \$30.2 million spent by park visitors generated \$10 million in direct personal income (wages and salaries) for local residents and supported 566 jobs in tourism-related businesses (Table E2). Including secondary effects the total impact of park visitor spending on the local economy was \$15 million in personal income and 741 jobs. These figures do not include the impacts of park employees, park operations or construction activity.

<sup>1</sup> Overnight visitors spending only a few hours visiting the park on a single day are treated as day trips, counting the equivalent of a day trip in expenses (\$17 per party). All expenses in the local area are counted for visitors on overnight trips that visit the park on more than one day.

**Table E2. Economic impacts of C&O Canal NHP visitor spending, 2003**

<u>Economic Sector</u>	<u>Sales (\$000's)</u>	<u>Jobs</u>	<u>Personal Income (\$000's)</u>	<u>Value Added (\$000's)</u>
<b>Direct Effects</b>				
Motel, hotel cabin or B&B	7,013	125	2,482	3,772
Campgrounds	538	10	190	289
Restaurants & bars	8,391	218	2,979	4,150
Amusements	3,264	86	1,153	1,887
Local transportation	1,945	46	1,127	1,326
Retail Trade	2,991	71	1,526	2,383
Wholesale Trade	688	6	278	474
<u>Local Production of goods</u>	<u>1,078</u>	<u>4</u>	<u>119</u>	<u>234</u>
<b>Total Direct Effects</b>	<b>25,907</b>	<b>566</b>	<b>9,855</b>	<b>14,516</b>
<u>Secondary Effects</u>	<u>14,277</u>	<u>175</u>	<u>5,229</u>	<u>8,878</u>
<b>Total Effects</b>	<b>40,184</b>	<b>741</b>	<b>15,083</b>	<b>23,395</b>
Multiplier	1.55	1.31	1.53	1.61

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## **Impacts of Visitor Spending on the Local Economy: Chesapeake & Ohio Canal National Historic Park, 2003**

### **Introduction**

The purpose of this study is to document the local economic impacts of visitors to Chesapeake & Ohio Canal National Historic Park (CHOH) in 2003. The local region is defined to encompass a half-hour drive of the park. Economic impacts are measured as the direct and secondary sales, income, jobs and value added in the region resulting from spending by park visitors. The economic estimates are produced using the Money Generation Model version 2 (MGM2) (Stynes and Propst, 2000).

### **Chesapeake & Ohio Canal National Historic Park**

Chesapeake & Ohio Canal National Historic Park preserves the Chesapeake & Ohio Canal along the Potomac River. The park encompasses hundreds of historic structures, including locks, lockhouses, and aqueducts from Washington, D.C. to Cumberland, MD. Adjacent to several metropolitan cities, Chesapeake & Ohio Canal NHP is a popular recreation destination for local residents. There are 30 hiker-biker campgrounds located along the canal. There are additional drive-in campsites with a nightly fee of \$10. The park entrance fee is \$5 for vehicles and \$3 for cyclists or pedestrians. With abundant trails and streams inside the park, hiking, biking, canoeing and boat rides are popular recreation activities.

Chesapeake & Ohio Canal NHP is located along the border of Maryland, West Virginia, Virginia, and Washington D.C. (Figure 1). Total recreation visits to Chesapeake & Ohio Canal National Historic Park was 2.8 million in 2003 (Table 1). Visits are measured visits at 32 locations throughout the park. Great Falls received 13% of total visits in 2003, followed by trails at Capital Crescent (11%) and Lock 10 (11%) (NPS Public Use Statistics, 2004). The season from July to October accounts for half of the annual recreation visits. Total camping nights at C&O Canal NHP was 18,521 in 2003.

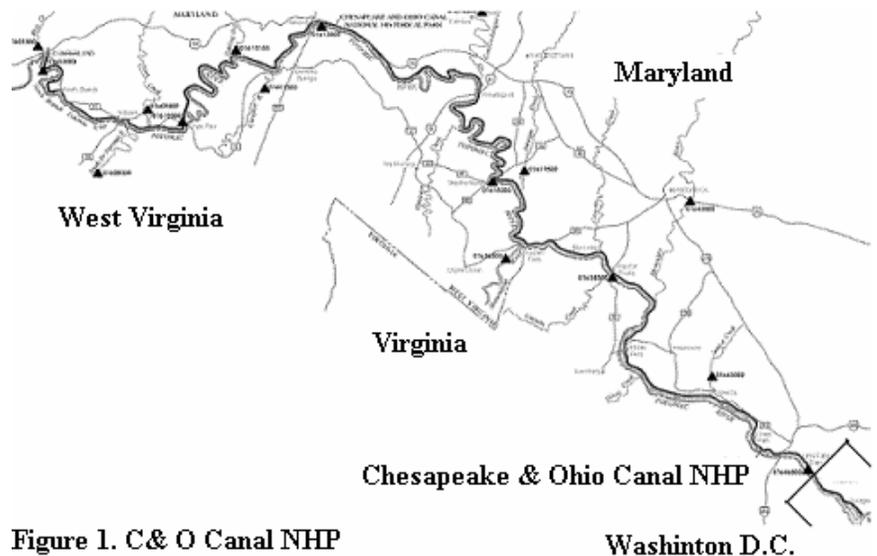


Figure 1. C& O Canal NHP

Washington D.C.

**Table 1. NPS Public Use Statistics for C&O Canal NHP, 2003**

Month	Recreation visits	Percent	Camping	Percent
January	109,157	4%	343	2%
February	104,032	4%	143	1%
March	216,077	8%	308	2%
April	249,560	9%	638	3%
May	229,241	8%	2,008	11%
June	228,070	8%	2,335	13%
July	302,912	11%	2,893	16%
August	387,491	14%	4,395	24%
September	338,644	12%	1,143	6%
October	308,536	11%	2,805	15%
November	186,212	7%	1,260	7%
<u>December</u>	<u>141,660</u>	<u>5%</u>	<u>250</u>	<u>1%</u>
Totals	2,801,592	100%	18,521	100%

Source: NPS Public Use Statistics (2004)

## Methods

Visitor spending and economic impacts are estimated with the Money Generation Model, version 2 (MGM2). The MGM2 model provides a spreadsheet template for combining park use, spending and regional multipliers to compute changes in sales, personal income, jobs and value added in the region. The three major inputs to the model are:

- 1) number of visits to the park, broken down into distinct visitor segments,
- 2) spending averages for each segment, and
- 3) economic ratios and multipliers for the local region

Recreation visits are taken from the NPS Public Use Statistics for 2003. Visitor characteristics and spending are estimated from the 2003 Chesapeake & Ohio Canal National Historic Park Visitor Survey (Meldrum, Littlejohn, Gramann, and Hollenhorst, 2004). The MGM2 large metro area multipliers capture the structure of the local economy.

## Chesapeake & Ohio Canal National Historic Park Visitor Survey, 2003

A park visitor survey was conducted at Chesapeake & Ohio Canal NHP from July 6<sup>th</sup> to 12<sup>th</sup>, 2003. The Visitor Survey Project (VSP) study measured visitor demographics, trip characteristics, travel expenditures, and visitor ratings of facility importance and quality. Questionnaires were distributed to a sample of 977 visitors at 13 locations through out the park. A total of 662 questionnaires were returned for a 67.8% response rate. Data generated from the visitor survey were used to develop spending profiles, segment shares and trip characteristics for

C&O Canal visitors. Some results reported here may differ slightly from the VSP report due to handling of outliers and missing values, and adjustments to better represent year-round use<sup>2</sup>.

Based on the visitor survey, the majority of visitors to C&O Canal NHP came from the state of Maryland (46%), followed by Virginia (17%) and Washington D.C. (11%). Five percent of the park visitors were international. Sixty-four percent of visitors reported that C&O Canal was their primary destination, 17% reported that it was one of several destinations, and 19% reported it was not a planned destination. When asked their primary reason for visiting the C&O Canal NHP area, 55% of groups came for recreation and 37% came to visit C&O Canal. See Meldrum et al. (2004) for a more detailed description of survey methods and other descriptive results.

### **MGM2 Visitor Segments**

Visitors are divided into distinct segments to help explain differences in spending across user groups. Overnight visitors are distinguished from day visitors based on lodging types reported in the C&O Canal NHP visitor survey questionnaire. Three overnight trip segments were established for C&O Canal NHP.

- Day trips: Park visitors not staying overnight away from home on the trip
- Camp-in: Visitors staying in campgrounds inside the park
- Motel: Visitors staying in hotels, motels, cabins, or B&B's within the region
- Other Overnight: Visitors staying in campgrounds, with friends or relatives, or other types of lodging within the region.

### **Converting Recreation Visits to Trips and Days in the Region**

The NPS Public Use Statistics provide estimates of the total number of recreation visits at 32 locations throughout the park in 2003. A recreation visit is the count of one person entering the park. To estimate spending, recreation visits are converted to the number of distinct trips or days in the region and then distributed to the four visitor segments. This avoids double counting spending of visitors who may enter the park multiple times on the same trip and also takes into account additional days a visitor may spend in the area outside the park.

Recreation visits are converted to party nights<sup>3</sup> as follows:

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<sup>2</sup> A total of 130 of the 662 respondents to the survey were omitted from parts of the economic analysis due to missing data, inconsistent responses or other reasons. Omitted cases included 18 respondents who did not report spending, 17 cases involving large parties (more than 8 people), 7 cases staying more than 7 days, 4 cases reporting more than \$1,000 per party per day in spending, 11 cases reporting more than 7 park entries per trip, 53 cases with inconsistent answers on length of stay and lodging types, and 16 cases choosing multiple lodging types.

<sup>3</sup> A party night is a travel group staying one night in the area. For day trips, estimates are in party days. The travel group is defined to include all individuals in the same vehicle or staying in the same room or campsite.

Vehicle entries to the park = recreation visits / party size  
 Party trips = vehicle entries / number of park entries per trip  
 Party nights in the area = party trips \* length of stay in the area

Total party nights and spending are sensitive to length of stay and re-entry factors. Lengths of stay indicate how many nights of spending will be counted for each visitor. Re-entry factors correct for multiple counting of visitors who may enter the park more than once on the same-trip.

## Results

### Trip and Party Characteristics

The average visitor party size was 2.6. Most park visitors fall into the day trip segment (Table 2). Overnight visitors spent an average of 2.6 nights in the local region.. The park entry rate was two times for visitors staying at hotels outside the park and 1.3 for campers staying inside the park. Results for the overnight segments should be interpreted cautiously as the sample sizes are small.

**Table 2. C&O Canal NHP visit conversion parameters by lodging segments**

	Day visitor	Camp-In	Hotel	Other overnight	All Visitors
Length of stay	1.0	1.7	2.7	2.6	1.2
Party size	2.6	3.1	2.6	2.8	2.6
Entry rate	1.3	1.3	2.0	1.7	1.3
Number of cases	424	13	42	42	521

Note: 17 cases involving large parties (more than 8 people), 7 cases staying more than 7 days and 7 cases reporting more than 7 park entries for the trip were omitted in computing these averages

### Visits, Trips and Nights by Segment

Segment shares were estimated based on the distribution of the 651 VSP study respondents<sup>4</sup>. Using the conversion parameters in Table 2, the 2.8 million recreation visits in 2003 were converted to 1.06 million vehicle entries or 787,173 party-trips to the park (Table 3). Visitors to C&O Canal in 2003 generated 977,338 party days/nights in the region. Day visitors contributed 68% of total party days, followed by other overnight visitors (16%) and hotel/motel users (13%).

<sup>4</sup> Eleven cases that did not identify a lodging type were excluded in estimating segment shares.

**Table 3. Visit measures for C&O Canal NHP by segment, 2003**

	Day visitor	Camp-In	Hotel	Other overnight	Total
Recreation visits	2,182,553	68,868	253,054	297,117	2,801,592
Vehicle entries	832,236	21,836	99,330	106,657	1,060,059
Party trips	660,049	16,797	48,794	61,533	787,173
Party nights	660,049	28,426	131,278	157,585	977,338
Pct of rec. visits	78%	2%	9%	11%	100%
Pct of vehicle entries	79%	2%	9%	10%	100%
Pct of party trips	84%	2%	6%	8%	100%
Pct of party nights	68%	3%	13%	16%	100%

### Spending Averages

Spending averages were estimated for each segment from the C&O Canal Visitor Survey data. Spending averages were computed on a party trip basis for each segment and then converted to a party night basis for overnight visitors by dividing by the average length of stay. The survey covered expenditures that occur within a half hour's driving distance of the park.

Visitors on day trips spent \$17 per party in the local region, 15% of which took place inside the park (Table 4). Campers staying inside the park spent around \$98 per party per trip or

**Table 4. C&O Canal NHP visitor spending by trip segment, 2003 (\$ per party trip)**

	Day visitor <sup>a</sup>	Camp-In	Hotel	Other overnight
<b>Inside the park</b>				
Camping fees	0.00	14.38	0.00	2.02
Admissions	1.71	0.00	5.45	1.19
<u>Souvenirs</u>	<u>0.79</u>	<u>3.85</u>	<u>1.67</u>	<u>2.26</u>
Total	2.50	18.23	7.12	5.48
<b>Outside the park</b>				
Hotel/motel	0.00	0.00	280.79	0.83
Camping fees	0.00	0.00	0.00	7.14
Guide fees	0.16	0.00	2.57	0.48
Restaurant/bar	5.58	31.38	124.93	33.17
Groceries	2.46	25.00	10.60	19.69
Gas/oil	3.13	17.15	12.76	10.17
Other transport	1.03	0.00	25.50	19.48
Admissions	0.90	0.00	25.31	17.05
<u>Souvenirs</u>	<u>1.00</u>	<u>6.15</u>	<u>56.55</u>	<u>8.88</u>
Total	14.26	79.69	539.00	116.88
<b>Total</b>	<b>\$16.76</b>	<b>\$97.92</b>	<b>\$546.12</b>	<b>\$122.36</b>
Pct of spending inside the park	15%	19%	1%	4%

Notes. <sup>a</sup> One hundred twenty-one cases of day visitors did not report spending in the survey. It is assumed that these visitors incur no expenses in the local region.

\$58 per party per day. Visitors staying at hotels, cabins or B&B's spent approximately \$546 per trip, or \$202 per party per day with a nightly hotel fee of \$104 (Table 5). Other overnight visitors spent \$122 in the region per party per trip. Less than five percent of the trip spending of the two overnight segments was made inside the park.

**Table 5. C&O Canal NHP Visitor spending by trip segment, 2003 (\$ per party day)**

Spending Category	Day visitor	Camp-In	Hotel	Other overnight
Motel, hotel cabin or B&B	0.00	0.00	104.36	0.33
Camping fees	0.00	8.50	0.00	3.58
Restaurants & bars	5.58	18.55	46.43	12.95
Groceries, take-out food/drinks	2.46	14.77	3.94	7.69
Gas & oil	3.13	10.14	4.74	3.97
Local transportation	1.03	0.00	9.48	7.60
Admissions & fees	2.77	0.00	12.39	7.31
<u>Souvenirs and other expenses</u>	<u>1.79</u>	<u>5.91</u>	<u>21.64</u>	<u>4.35</u>
Total	16.76	57.86	202.98	47.78
Standard error of mean	2.06	15.68	25.28	7.02
Percent error (std. error / mean)	12%	27%	12%	15%

### Total Visitor Spending

Total visitor spending is calculated by multiplying the number of party-nights in the area (Table 3) by the spending averages for each segment (Table 5). The calculations are carried out segment by segment, summing across the four segments to obtain the grand total. Visitors to C&O Canal NHP in 2003 spent \$46.9 million in the local area in 2003 (Table 6). Park visitors spent \$14.2 million on lodging (including camping fees) and \$12.3 million in restaurants and bars.

Not all of this spending can be directly attributed to the park, as many overnight visitors were in the area for other reasons and spent only a couple hours in the park<sup>5</sup>. Spending attributed to the park visit is estimated by counting a portion of the expenses reported by these visitors. For day visitors and visitors camping inside the park, all reported trip expenses are counted. For visitors staying overnight outside the park in the local area, all trip expenses are included if they visited the park multiple days during the trip. Those who only visited the park for a couple hours on a single day were treated like day trip visitors<sup>6</sup>, counting only \$17 of spending per party..

<sup>5</sup> See Appendix B for a table reporting the distribution of trip purposes by segment

<sup>6</sup> All expenses are counted for the 22% of overnight visitors that spent multiple days visiting the park, while 78% of overnight visitors are treated as day trips in attributing spending to the park visit.

With these adjustments, total spending attributed to the park visit is \$30.2 million (Table 7). About half of the spending by overnight visitors is attributed to the park visit, while all spending for day trips and visitors camping inside the park are counted. Visitors staying overnight in hotels/motels still account for 45% of the attributed spending, followed by visitors on day trips (37%) and other overnight visitors (13%).

**Table 6. Total spending of C&O Canal NHP visitors in 2003 (\$000's)**

Category	Day visitor	Camp-In	Hotel	Other overnight	Total	Pct
Motel, hotel cabin or B&B	0	0	13,701	51	13,752	29%
Camping fees	0	242	0	564	806	2%
Restaurants & bars	3,685	527	6,096	2,041	12,348	26%
Groceries, take-out food/drinks	1,627	420	517	1,212	3,775	8%
Gas & oil	2,063	288	623	626	3,599	8%
Local transportation	682	0	1,244	1,198	3,125	7%
Admissions & fees	1,831	0	1,626	1,152	4,609	10%
<u>Souvenirs and other expenses</u>	<u>1,178</u>	<u>168</u>	<u>2,840</u>	<u>686</u>	<u>4,873</u>	<u>10%</u>
Total	11,065	1,645	26,647	7,529	46,886	100%
Pct	24%	4%	57%	16%	100%	

**Table 7. Total attributed spending of C&O Canal NHP visitors in 2003 (\$000's)**

Category	Day visitor	Camp-In	Hotel	Other overnight	Total	Pct
Motel, hotel cabin or B&B	0	0	6,986	27	7,013	23%
Camping fees	0	242	0	296	538	2%
Restaurants & bars	3,685	527	3,108	1,071	8,391	28%
Groceries, take-out food/drinks	1,627	420	264	636	2,946	10%
Gas & oil	2,063	288	318	328	2,996	10%
Local transportation	682	0	634	629	1,945	6%
Admissions & fees	1,831	0	829	604	3,264	11%
<u>Souvenirs and other expenses</u>	<u>1,178</u>	<u>168</u>	<u>1,448</u>	<u>360</u>	<u>3,154</u>	<u>10%</u>
Total	11,065	1,645	13,588	3,950	30,247	100%
Pct	37%	5%	45%	13%	100%	

## Economic Impacts of Visitor Spending

The \$30.2 million spent by C&O Canal NHP visitors had a direct economic impact on the region of \$26.0 million in direct sales, \$9.9 million in personal income (wages and salaries), \$14.5 million in value added, and supported 566 jobs in the region<sup>7</sup> (Table 8). These impacts were computed using the large metro area multipliers from the MGM2 model. The restaurant sector received the largest amount of direct sales (\$8.4 million), followed by hotel (\$7.0 million) and amusement sectors (\$3.3 million).

Direct effects are less than total spending, as only the retail and wholesale margins on visitor purchases of goods accrue to the local economy. The local region surrounding C&O Canal captures 86% of visitor spending. Fourteen percent of visitor spending leaks out of the local economy to cover the costs of imported goods bought by visitors<sup>8</sup>.

The sales multiplier for the region is 1.55, meaning that an additional \$0.55 in sales is generated through secondary effects for every dollar of direct sales. Secondary effects generate an additional 175 jobs, about \$5.2 million in personal income and \$8.9 million in value added. Including direct and secondary effects, the total impacts of C&O Canal visitor spending in 2003 on the local economy is \$40.2 million in sales, \$15.1 million in personal income, \$23.4 million in value added, and 741 jobs.

**Table 8. Economic impacts of C&O Canal NHP visitor spending, 2003**

Economic Sector	Direct Sales (\$000's)	Jobs	Personal Income (\$000's)	Value Added (\$000's)
<b>Direct Effects</b>				
Motel, hotel cabin or B&B	7,013	125	2,482	3,772
Campgrounds	538	10	190	289
Restaurants & bars	8,391	218	2,979	4,150
Amusements	3,264	86	1,153	1,887
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Retail Trade	2,991	71	1,526	2,383
Wholesale Trade	688	6	278	474
<u>Local Production of goods</u>	<u>1,078</u>	<u>4</u>	<u>119</u>	<u>234</u>
<b>Total Direct Effects</b>	<b>25,907</b>	<b>566</b>	<b>9,855</b>	<b>14,516</b>
<u>Secondary Effects</u>	<u>14,277</u>	<u>175</u>	<u>5,229</u>	<u>8,878</u>
<b>Total Effects</b>	<b>40,184</b>	<b>741</b>	<b>15,083</b>	<b>23,395</b>
Multiplier	1.55	1.31	1.53	1.61

<sup>7</sup> Personal income covers wages and salaries, including payroll benefits. Value added is the sum of personal income accruing to area households, profits and rents of area businesses, and indirect business taxes. Jobs include full and part time jobs (See Appendix A for details).

<sup>8</sup>For example, if a visitor buys \$50 dollars worth of clothing at a local store, the store receives the retail margin (assume \$20 dollars), the wholesaler or shipper (if local) may receive \$5 dollars, and the remaining producer price of the clothing (\$25 dollars) leaks immediately outside the local economy, unless the clothing is manufactured in the local region.

## Study Limitations and Errors

The accuracy of the MGM2 estimates rest on the three primary inputs: multipliers, visits, and spending averages. The MGM2 large metro area multipliers provided a reasonable description of the local economy. The 2003 C&O Canal Visitor Survey provides the spending averages and visit conversion parameters. These are subject to sampling errors, measurement errors and potential seasonal biases.

The visitor survey was conducted during a single 7-day period in July, 2003. Results are assumed to represent summer season visitors, which accounted for 52% of annual visits in 2003. Off-season visitors may have smaller party sizes and may spend less on accommodations due to lower off-season rates and fewer campers. Minor adjustments were made to some parameter estimates from the VSP survey to reduce potential seasonal bias.

The sampling error for the overall per night spending average was 6% and ranged from 12% to 27% for individual visitor segments<sup>9</sup>. Using a 95% confidence interval around the spending average, total visitor spending attributed to the park in 2003 was estimated at between \$27.2 and \$33.2 million.

The urban setting and linear configuration of the park pose difficulties for economic analysis. The linear corridor around the park does not constitute a viable economic region. The MGM2 metro area multipliers will exaggerate secondary effects somewhat, if these are strictly interpreted as occurring within ½ mile of the park. Secondary effects should be interpreted as likely spilling over into the larger region. The local region will be somewhat fuzzy in any event as visitors had to estimate spending that occurred within a ½ hour drive of the park.

No attempt was made to identify local visitors from zipcodes, as zipcode areas do not readily coincide with the 1/2 hour driving distances used to define the impact region. Also, visitors may live within a half hour of one section of the park, but be visiting a location much further away. Identifying local visitors is therefore somewhat problematic. All day trips were therefore combined into a single segment for the analysis. This combines local visitors with day trips from the surrounding area.

Visitors on overnight trips account for the majority of spending, but many of these visitors did not make the trip primarily to visit the park. Some are visiting relatives, on business or a general vacation trip. Decisions on how much of their spending while in the area to attribute to the park visit is somewhat arbitrary. The rule of treating short visits to the park as day trips, while counting all expenses for trips involving multi-day visits to the park seems reasonable.

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<sup>9</sup> Sampling errors in the spending averages depend on the number of cases sampled and the variation in the sample.

## Summary and Discussion

Visitors to Chesapeake & Ohio Canal National Historic Park spent \$47 million within a half hour drive of the park in 2003. Sixty-four percent of this spending or \$30 million is attributed to the park visits. The direct economic effects of this spending is \$26 million in sales, \$9.9 million in personal income (wages and salaries), \$14.5 million in value added, and 566 jobs. With multiplier effects, visitor spending generated a total of \$40 million in sales, \$15 million in personal income, \$23 million in value added, and 741 jobs. Sectors receiving the greatest direct benefit from park visitors were restaurants (\$8.4 million in direct sales), hotels (\$7.0 million), and amusements (\$3.3 million).

Estimates of jobs, income and sales associated with C&O NHP visitor spending are likely not the most important economic effects of the park. The economic activity generated by park visitors represents a very small percentage of economic activity in the region. Most visitors live within the local region, so their spending does not represent “new” dollars to the economy. While the park also serves many tourists, most of these visitors did not come to the region specifically to visit C&O NHP. The number of overnight visitors in the VSP sample is too small to reliably determine which spending would be lost to the area in the absence of the park.

The value of the park is better captured in terms of the value to residents and park users of preserving the historic sites and natural environment and providing for a variety of recreation uses. These values are measured in terms of the visitor’s willingness to pay or consumer surplus rather than expenditures, jobs and income.

The economic impacts presented in this report document the economic significance of 2.8 million recreation visits to C&O Canal NHP in 2003. Impacts will vary from year to year with changes in prices, visitor volumes, the mix of visitors attracted, trip characteristics, and other changes in the park and surrounding communities. The MGM2 model has built-in procedures to price adjust spending averages over time, so that updated spending and impact figures may be obtained fairly easily. In the absence of significant structural changes in the local economy, multipliers will be quite stable over time. Changes in the number and kinds of visitors can be entered into the model to update impact estimates over time.

## References

- Bureau of Economic Analysis. (2004). REIS, 2002. <http://www.bea.gov/bea/regional/reis/>. Data retrieved on August 1, 2004.
- National Park Service Public Use Statistic Office. (2004). 1979-2002 Visitation DataBase. <http://www2.nature.nps.gov/stats/>. Data retrieved on August 1, 2004.
- Stynes, D. J., Propst, D.B., Chang, W. and Sun, Y. (2000). Estimating national park visitor spending and economic impacts: The MGM2 model. May, 2000. Final report to National Park Service. East Lansing, Michigan: Department of Park, Recreation and Tourism Resources, Michigan State University.
- Meldrum, B.H., Littlejohn, M. A., Gramann, J., and Hollenhorst, S.J. (2004). Chesapeake & Ohio Canal National Historic Park Visitor Study. Summer, 2003. Visitor Services Project Report #145. Moscow, ID: National Park Service and University of Idaho, Cooperative Park Studies Unit.

### Appendix A: Definitions of Economic Terms

<b>Term</b>	<b>Definition</b>
Sales	Sales of firms within the region to park visitors.
Jobs	The number of jobs in the region supported by the visitor spending. Job estimates are not full time equivalents, but include part time positions.
Personal income	Wage and salary income, proprietor's income and employee payroll benefits.
Value added	Personal income plus rents and profits and indirect business taxes. As the name implies, it is the net value added by the region to the final goods and services being provided. For example, the value added by a hotel includes wages and salaries paid to employees, their payroll benefits, profits of the hotel, and sales and other indirect business taxes. The hotel's non-labor operating costs such as purchases of supplies and services from other firms are not included as value added by the hotel.
Direct effects	Direct effects are the changes in sales, income and jobs in those business or agencies that directly receive the visitor spending.
Secondary effects	These are the changes in the economic activity in the region that result from the re-circulation of the money spent by visitors. Secondary effects include indirect and induced effects.
Indirect effects	Changes in sales, income and jobs in industries that supply goods and services to the business that sell directly to the visitors. For example, linen suppliers benefit from visitor spending at lodging establishments.
Induced effects	Changes in economic activity in the region resulting from household spending of income earned through a direct or indirect effect of the visitor spending. For example, motel and linen supply employees live in the region and spend the income earned on housing, groceries, education, clothing and other goods and services.
Total effects	Sum of direct, indirect and induced effects. <ul style="list-style-type: none"> <li>▪ Direct effects accrue largely to tourism-related businesses in the area</li> <li>▪ Indirect effects accrue to a broader set of businesses that serve these tourism firms.</li> <li>▪ Induced effects are distributed widely across a variety of local businesses.</li> </ul>

### Appendix B. Distribution of Trip Purposes by Lodging Segments

	Day visitor	Camp-In	Hotel	Other overnight	Total/Average
C&O Canal NHP was primary destination	74%	75%	14%	27%	64%
C&O Canal NHP was one of several destinations	13%	13%	29%	40%	17%
<u>C&amp;O Canal NHP was not a planned destinations</u>	<u>13%</u>	<u>13%</u>	<u>57%</u>	<u>33%</u>	<u>19%</u>
Total	100%	100%	100%	100%	100%
Number of cases	481	16	56	55	608